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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,644	07/13/2001	William H. Roetzheim	COS-01	3382

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EXAMINER	
VU, TUAN A	
ART UNIT	**PAPER NUMBER**
2124	

DATE MAILED: 08/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/904,644	ROETZHEIM, WILLIAM H.	
	Examiner	Art Unit	
	Tuan A Vu	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 13 July 2001.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-21, 23 is/are rejected.

7)☒ Claim(s) 22 and 24 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 13 July 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2001/7/13.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to the application filed July 13, 2001.

Claims 1-24 have been submitted for examination.

Claim Objections

2. Claim 10 is objected to because of the following informalities: there should be one preposition in the phrase group 'using the an inverse' (line 2). It is suggested that the first 'the' be taken out. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-12, 15-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carnegie Mellon Univ., "*Software Engineering Institute Special Report*": Chap. 6, Appendix B, Copyright 1995, CMU/SEI-95-SR-004 (hereinafter Carnegie), in view of Minkiewicz et al., USPN: 6,073,107 (hereinafter Minkiewicz).

As per claim 1, Carnegie discloses a method of estimating an outcome for a software development project (SDP), comprising:

selecting a parametric rule having a plurality of variables (ch. 6, Fig. 6-13; *Parametric Models, Function Point Model* – pg. 34-38);

choosing a project type (e.g. *systems, WBS* – Chp. 6: Fig. 6.4; Appendix B – Note: every subsystems define a project type), a lifecycle (e.g. Ch. 6: Fig.6.6, pg. 9; App. B: Fig. B-1), and a

standard (e.g. *MIL-STD-88* - Appendix B: preface; ch.6, pg. 25 -SEER-SEM, *MIL-STD-498*) for the software development project; using the parametric and

generating the outcome (e.g. ch. 6, *Cocomo II outputs* - pg. 22; *Cocomo 81 outputs* – pg. 18).

But Carnegie does not expressly disclose assigning a type factor responsive to choosing the project type; assigning a lifecycle factor responsive to choosing the lifecycle; or assigning a standard factor responsive to choosing the standard; nor does Carnegie disclose using the type factor, the lifecycle factor, and the standard factor as variables in the parametric rule. Carnegie uses different model approaches to make variables out of considered from project type, stage of development and generate output using rules and associating variables therefrom (standard: MIL-STD, ANSI J-STD, type: COTS… database, lifecycle: *development method … waterfall*, see ch. 6, SEER-SEM pg. 25-34); hence has suggested using variables from project type, standard and lifecycle, i.e. a quantized factor representing those variables derived from type, standard, or lifecycle stage. The use of variables or factor representing a real world requirement entities (e.g. domain, environment, complexity, application type – Cocomo 81, Cocomo II) in a parametric rule for assessing and evaluating possible outcome of a software project was a known-concept at the time the invention was made (e.g. COCOMO 81, COCOMO II). Likewise, Minkiewicz, in a method to estimate cost using parameters analogous to the techniques (e.g. COCOMO, ch. 6 pg. 14-23) mentioned by Carnegie, discloses visual wizard using variables (e.g. lifecycle activity, application) represented by parameters being collected inside a wizard / tool used to calculate forecast project cost or variation (e.g. Type: *Application Type*, lifecycle: *Lifecycle Model: Medium*, standard: *ISO 9000*, Fig. 6-12). Thus, it would have

been obvious for one of ordinary skill in the art at the time the invention was made to take the variables as application/project type, lifecycle stage, and software project standard as inputs and associate a factor thereto, then provide these factors as parameters being collected for implementing a parametric rule factoring those parameters as suggested by Minkiewicz because, like other factors such as those suggested by COCOMO in the generation of parameters for SDP cost output, these variables would also be represented in some quantized values or numerical factors such as exemplified by Minkiewicz, such to enable the estimation be formulated in a mathematical/parametric rule yielding a quantized outcome or numerical output.

As per claim 2, Carnegie teaches effort being an outcome (e.g. *PM* – Cocomo II pg. 18-19; *Effort* -Fig. 6-18, pg. 39-40).

As per claim 3, see Carnegie: *Defects*, Fig. 6-18, pg. 39-40.

As per claim 4, see Carnegie: *Schedule*, Fig. 6-18, pg. 39-40.

As per claim 5, see Effort, Cost, Fig. 16-8 (Note: the notion of measuring estimated cost as an outcome is inherent to COCOMO and similar tool like Minkiewicz's).

As per claim 6, Carnegie discloses process maturity and required schedule factors (e.g. Fig. 6-10, pg. 17; Fig. 6-11, pg. 20) hence has suggested a lifecycle-related factor according to the lifecycle methodology and capability of a SDP (see section B-E, pg. 3-12) and association of those factors with a table or a checklist (section E, pg. 12). Hence, Carnegie has suggested a look-up table for associating lifecycle related factors in conjunction with generating a lifecycle parameter used in the parametric rule implementation. Minkiewicz, in the parameters collecting wizard, further discloses table representing different lifecycle stages and related numbers (Fig. 11-12). It would have been obvious for one of ordinary skill in the art at the time the invention

was made to provide a table as suggested by Carnegie, so that corresponding numerical factors representing a stage of a SDP lifecycle can be looked up as suggested via Minkiewicz's teachings. This would enable a fast retrieval of the corresponding parameters for a specific factor destined to be used for implementing the parametric rule, and in so doing expedite the generation or enable the automation of such rule-based outcome generation, all this in conjunction with the common benefit that goes with using a look-up table as taught by well-known practices.

As per claim 7, the limitation of using a look-up table for a standard factor would have been obvious in view of the rationale in addressing the standard factor in claim 1 combined with that addressing the look-up table limitation of claim 6.

As per claim 8, Carnegie does not explicitly teaches a lifecycle factor being a linear parameter; but indirectly includes factor that emanates from choosing a lifecycle model (see claim 6); while Minkiewicz teaches parameters related to an lifecycle stage (Fig. 9-12). The motivation for combining the lifecycle factors as taught by Minkiewicz to the rule-based approach by Carnegie (to generate estimate cost output – Cocomo 81, Cocomo II, re claim 1) such that those factors are linear factor of an parametric equation or formula as suggested by Cocomo and enhanced by Minkiewicz would have been obvious and established for the same benefits in using the factors representing the lifecycle variable as addressed in claim 1.

As per claim 9, the limitation of using a standard factor as a linear parameter would have been obvious in view of the rationale in addressing the standard factor in claim 1 combined with that addressing the linear lifecycle factor limitation of claim 8.

As per claim 10, Carnegie discloses complexity being a factor (Fig. 6-10) and Minkiewicz discloses parametric values to be inversely proportional with the ascending order of a lifecycle evolution (Fig. 11-12). Official notice is taken that the time consumed or resources being spent on the earlier stages of a SDP is more significant than those spent at a latter stages (e.g. requirement stages versus maintenance stage) of the SDP was a known concept at the time the invention was made. Hence, it would have been obvious for one of ordinary skill in the art at the time the invention was made to made lifecycle factor as being inversely proportional to an outcome, e.g. cost decrease as lifecycle stage ascends because of the known concept learned from spending requirement engineering resources up front as well-known in the art of SDP.

As per claim 11, whereas the type of project such as a project for military with a specific standard as noted by Carnegie dictates the cost in proportion of resources (e.g. *DOD, 80:20, 20:80* - Introduction pg. 1; *MIL-STD*, pg. 25), the standard factor can play some linear role in setting a parametric rule. Carnegie does not specifically teach providing a standard factor as an inverse factor in the parametric rule. But given the complexity of a military project being a factor and the effect of a hardware statistics involved as a military standard is applied as implemented by Carnegie, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the standard factor, a military factor, in a parametric formula (as from the combined teachings of Carnegie and Minkiewicz) such that it is inversely proportional to an outcome, e.g. software cost versus hardware cost as suggested above because of the reasons as mentioned from military complex combination of hardware involvement as opposed to a predominantly software cost in a non-military SDP.

As per claim 12, Carnegie discloses a size being a number of lines of code (e.g. *KSLOC* – Cocomo II pg. 19, 21; *SLOC* - Figure 6-18, pg. 39).

As per claim 15, Carnegie (combined with Minkiewicz) discloses an environment factor (e.g. SEER-SEM inputs: *Platform, environment complexity*, Target – pg. 25-26).

As per claim 16, Carnegie teaches a WBS (Appendix B) and suggests Case tools for collecting user's specified requirements (e.g. *Case Tool*, D. Object Points – pg. 33) and Minkiewicz discloses a wizard with a interface viewer tool including Case tool(e.g. Fig. 7-13) to collect metrics for the parametric evaluation. Although Carnegie and Minkiewicz do not explicitly teach a template for generating a product breakdown, the teachings from above suggests using a template like interface for setting up the breakdown of parameters prior to establishing the relationships between factors in order to produce the estimation outcome from the parametric rule implementation. Hence, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the breakdown as suggested by Carnegie using a generic template tool as taught by Minkiewicz or suggested by Carnegie's Case Tool, so that a factor, e.g. lifecycle factor, can be displayed and user-manipulated via the template; and the motivation for this would have been because such template would allow user interaction and editing capability in regard to data being entered for specifying an user's requirements, using one of the most commonly known features of today's graphical development tool such as Case Tools as taught above.

As per claim 18, the rationale for rejection of the limitation of a generic standard template is the same as that set forth in claim 16 above.

As per claims 17 and 19, these claims relate to a form of intended use of the generic template created for the lifecycle and the standard as set forth in claim 16 and 18 above, hence the use of a template for allowing user interaction, dynamic modification and selection of items on such template is but one obvious intended use thereof. Thus, the claims would have been obvious for the same reasons as set forth in claims 16, 18, by virtue of the implied use of template for mapping a selection onto items created for that very purpose.

As per claim 20, this claim includes a type factor, a lifecycle factor, a standard factor as recited in claim 1 in conjunction with a parametric rule; and further includes the environmental factor and size element as addressed in claims 15 and 12, respectively. The limitation for using all those factors into the parametric rule would have been obvious in light of the rationale used to address said factors the corresponding claims above.

As per claim 21, Carnegie only teaches effort in terms of factors as a laid out by Cocomo approach (re claim 1) but in view of the rationale as to use all the factors listed in claim 20, the general form of EFFORT = FACTOR * LIFECYCLE * STANDARD * ENVIRONMENT * SIZE would have been also obvious in view of the rationale of claims 1, 15, and 12.

As per claim 23, Carnegie does not disclose 'Defect = defect factor * effort * (1/lifecycle factor) * (1/standard factor)'. However, Carnegie teaches Military standard and CMM levels (Fig. 6-7, pg. 10) and computation of defects (e.g. PRICES S: ...*delivered defects* – pg. 25; SEER-SEM Processing: ... *defects are computed* – pg. 27); while Minkiewicz discloses the decreasing of cost as the lifecycle stages advances and defect statistics (Defect/Func – Fig. 11, 12). Official notice is taken that the concept that the more advanced the maturity level is or the more solid a development standard is defined, the less chance of cost incurred due to software

errors or verification failure would be noted was particularly well-known in the art of developing software project at the time the invention was made. Hence, it is therefore evident that the maturity levels in conjunction with Carnegie's military standards as mentioned above would play a factor such that they fall under the rationale of the well-known concepts as noticed above. In combination with the inverse linearity relationship taught by Minkiewicz in terms of the lifecycle, it is recognized that the estimate for defect would decrease when lifecycle factor increases, and when the standard factor is more advanced. Following of the rationale used in claim 10 and combining it with the above defect estimate dependency on lifecycle and standard, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the defect computation as taught by Carnegie and the linear factor arrangement as suggested by COCOMO's parametric-based calculating of outcome so to include the inverse relationship of lifecycle and standard as noted above in conjunction with the effort for providing the defect calculation thus mentioned. The motivation would be because this parametric rule would exhibit how much the defect factor is influenced by the complexity demanding a linear increase in effort as opposed to it being dependent on the inverse relation with lifecycle and standard elements, as analyzed from above notice.

5. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carnegie Mellon Univ., "*Software Engineering Institute Special Report*": Chap. 6, Appendix B, Copyright 1995, and Minkiewicz et al., USPN: 6,073,107, as applied to claim 12, further in view of Srulowitz et al., "Software Estimation", URL: *www.saspin.org/SASPIN_Apr2001_COCOMO.pdf* (hereinafter Minkiewicz).

As per claims 13 and 14, Carnegie only teaches SLOC being generated with Function points techniques (e.g. Cocomo II, SEER-SEM – pg. 19-33). Using also function points to establish SLOC output, Srulowitz, in a method for estimation of software using the approach based on COCOMO like Carnegie, discloses using internet points and Domino points (Metric Methodologies Supported – pg. 43). The evolution of network transmission and internet-based medium for carrying business application and industrial, military project data such that collecting data being distributed across those media and estimating size thereof by means of internet-adapted techniques (*internet points* – re claim 13, *Domino points* – re claim 14) for estimation was a known concept at the time the invention was made. Hence, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide such techniques as interpoint points or Domino points techniques shown by Srulowitz to compute the SLOC as suggested by Carnegie because this would enable the distributed application data under the SDP to be capture according to a techniques differentiated to operate with the client-server or browser application of a given distributed SDP, as taught by known concepts and suggested by Srulowitz.

Allowable Subject Matter

6. Claims 22 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Some specific exponential elements found in the parametric rule, e.g. *KSLOC^(Mb + Sum(Envs))* – re claim 22; or *Effort ^ (Tb + Sum(Envs/5))* - re claim 24 - are not found to be obvious from any prior art of record.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A Vu whose telephone number is (703)305-7207. The examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for formal communications intended for entry)

or: (703) 746-8734 (for informal or draft communications, please consult Examiner before using this number)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA. , 22202. 4th Floor(Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VAT
July 19, 2004

ANIL KHATRI
PRIMARY EXAMINER

ANIL KHAT
PRIMARY EXA